Bingnan Li

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Education

ShanghaiTech University **Sep. 2020 – Jun. 2024 (Expected)**
B.E in Computer Science and Technology *Shanghai, China*

- **GPA:** 3.89/4.00
- **Ranking:** 2/177(among major) 3/248(among school)

Core Coursework

- Computer Architecture I: A+
- Computer Graphics I: A+
- Artificial Intelligence I: A+
- Computer Vision II: A+
- Introduction to Machine Learning: A
- Deep Learning: A
- Digital Image processing: A
- Algorithm Design and Analysis: A

Publications

Gradient-Map-Guided Adaptive Domain Generalization for Cross Modality MRI Segmentation
***Bingnan Li**, Zhitong Gao, Xuming He* **ML4H 2023 (Under Review)**

- Develop a novel architecture capable of handling the variance between different modalities.
- Utilize Gradient-Map as a learning-free domain-invariant representation to cope with the global appearance discrepancy during the training stage.
- Leverage Test-Time-Adaptation technique and class prior information to iteratively mitigate heterogeneous disparities.
- Validate and evaluate our method on extensive benchmarks including brain and cardiac.

Selected Projects

Multi-Resolution Isosurface Rendering **2022**
***Bingnan Li**, Suting Chen* *Report | Code*

- Course project of CS171 Computer Graphics I, ShanghaiTech University
- We visualized the Q-criteria of speed fields around a sphere by Multi-Resolution Isosurface Rendering, our implementation is based on OpenVDB and OpenMP, which is efficient to run on CPU.

Intelligence Strategy Exploration on Chinese Chess **2022**
***Bingnan Li**, Suting Chen, Zeen Chi, Yifan Qin, Zhongxiao Cong* *Report | Code*

- Course project of CS181 Artificial Intelligence, ShanghaiTech University
- We explored three intelligent strategies, including MinMax Search, Monte-Carlo Tree Search, and Q-learning, on Chinese Chess. Our implementation includes Python and C++ versions. Extensive comparisons are conducted internally and with other AI models.

Exploration on Novel View Synthesis with Generative Models **2023**
***Bingnan Li**, Yifan Qin, Yan Zeng, Chongyu Wang, Yucen Peng, Zheng Chen* *Report | Code*

- Course project of CS272 Computer Vision II, ShanghaiTech University
- We explored the capabilities of three mainstream generative models (VAE, GAN, and Diffusion) on Single image Novel View Synthesis. Experiments are performed on SRN ShapeNet dataset and metrics like PSNR and SSIM are reported.

Multi-resolution Blending via Gaussian and Laplacian Pyramid **2023**
***Bingnan Li**, Hongyang Lin, Xinzhou Cong* *Report | Code*

- Course project of CS270 Digital Image Processing, ShanghaiTech University
- We proposed a novel architecture that can automatically restore blurred images and blend them together. For degraded images, we extract degradation function features from the frequency domain and utilize Hough transform to detect the restoration parameters automatically, then we leverage Gaussian and Laplacian Pyramid to blend them.

Few-Shot Semantic Segmentation Exploration with Diffusion Model **2023**
***Bingnan Li**, Yifan Qin, Yan Zeng, Haoyuan Tian, Shuhao Zhang* *Report | Code*

- Course project of CS280 Deep Learning, ShanghaiTech University
- We have put forward a new technique that can perform few-shot segmentation using the feature of the Diffusion model. Our research has revealed that a simple segmentation model trained on the human category can effortlessly transfer its segmentation skill to other animal classes, such as dogs and cats, with only a brief fine-tuning.

Activities & Honors & Awards

Teaching Assistant | Mathematical Analysis II	*Sep. 2021 – Feb. 2022*
Teaching Assistant | Discrete Mathematics	*Feb. 2023 – Jun. 2023*
Research Assistant | PLUS LAB	*2022 – present*
Officer | New Media Department in Student Union	*Sep. 2020 – Sep. 2021*
Team Leader | first Sichuan Liang Mountain social practice team	*2021*
Volunteer | Shanghai Half Marathon	*Apr. 2021*
2020 Outstanding Officer of Student Union	*2021*
Social Practice, Outstanding Individual, The Most Outstanding Team	*Oct. 2021*
Industrial Practice, Outstanding Individual, The Most Outstanding Team	*Oct. 2022*
Honored student of the School of Information Science and Technology.	*2021, 2022*

Technical Skills

Languages: Python, C, C++, Matlab, RISC-V
Developer Tools: JetBrains Pycharm, VS Code,
Technologies/Frameworks: Linux, GPU Cluster, GitHub, PyTorch, Numpy, OpenCV